

We claim:

1. A process comprising:

- (a) contacting a fuel stream containing organosulfur impurities with an organic hydroperoxide in the presence of an oxidation catalyst to form an oxidized fuel stream, wherein a substantial portion of the organosulfur impurities are converted into sulfones and a substantial portion of the organic hydroperoxide is converted into an alcohol;
- (b) removing the alcohol from the oxidized fuel stream to form an alcohol-reduced oxidized fuel stream; and
- (c) extracting the sulfones from the alcohol-reduced oxidized fuel stream by solid-liquid extraction using a sulfone adsorbent.

2. The process of claim 1 wherein the organic hydroperoxide is t-butyl hydroperoxide and the alcohol is t-butyl alcohol.

3. The process of claim 1 wherein the oxidation catalyst is a titanium-containing silicon oxide catalyst.

4. The process of claim 3 wherein the titanium-containing silicon oxide catalyst is titania-on-silica.

5. The process of claim 1 wherein the alcohol is removed by distillation.

6. The process of claim 1 wherein the sulfone adsorbent is selected from the group consisting of silicas, aluminas, and silica-aluminas.

7. A process comprising:

- (a) extracting organonitrogen impurities from a fuel stream containing organonitrogen and organosulfur impurities whereby the nitrogen content of fuel stream is reduced by at least 50 percent to produce a fuel stream having a reduced amount of organonitrogen impurities;
- (b) separating and recovering the fuel stream having a reduced amount of organonitrogen impurities;
- (c) contacting the separated fuel stream having a reduced amount of organonitrogen impurities with an organic hydroperoxide in the presence of a titanium-containing

silicon oxide catalyst to form an oxidized fuel stream, wherein a substantial portion of the organosulfur impurities are converted into sulfones and a substantial portion of the organic hydroperoxide is converted into an alcohol;

- (d) removing the alcohol from the oxidized fuel stream to form an alcohol-reduced oxidized fuel stream; and
- (e) extracting the sulfones from the alcohol-reduced oxidized fuel stream by solid-liquid extraction using a sulfone adsorbent.

**8.** The process of claim 7 wherein the organonitrogen impurities are extracted by solid-liquid extraction using at least one organonitrogen adsorbent.

**9.** The process of claim 8 wherein the organonitrogen adsorbent is selected from the group consisting of aluminum oxide, silicon oxide, silica-alumina, zeolite Y, Zeolite X, ZSM-5, magnesium oxide, and sulfonic acid resin.

**10.** The process of claim 7 wherein the organonitrogen impurities are extracted by liquid-liquid extraction using at least one polar solvent.

**11.** The process of claim 10 wherein the polar solvent is selected from the group consisting of a C<sub>1</sub>-C<sub>4</sub> alcohol, a C<sub>3</sub>-C<sub>8</sub> ketone, water, and mixtures thereof.

**12.** The process of claim 10 wherein the polar solvent is a mixture of methanol and water.

**13.** The process of claim 7 wherein the organic hydroperoxide is t-butyl hydroperoxide and the alcohol is t-butyl alcohol.

**14.** The process of claim 7 wherein the titanium-containing silicon oxide catalyst is titania-on-silica.

**15.** The process of claim 7 wherein the alcohol is removed by distillation.

**16.** The process of claim 1 wherein the sulfone adsorbent is selected from the group consisting of silicas, aluminas, and silica-aluminas.

**17.** A fuel product produced by the process of claim 1.

**18.** A fuel product produced by the process of claim 7.